

### Remarks

Claims 1-26 are currently pending in the patent application. Of these pending claims, only claims 1, 12, 18, and 21 are independent claims. Claims 2-11, 13-17, 19-20, and 22-26 depend from these claims. As the Court noted in *In re Fine*, “dependent claims are nonobvious under section 103 if the independent claims from which they depend are nonobvious.” 5 U.S.P.Q.2d 1569, 1600 (Fed. Cir. 1988). Using this same rationale, dependent claims cannot be anticipated if the independent claims from which they depend are not anticipated. Since the Applicants respectfully assert that these independent claims are allowable, dependent claims 2-11, 13-17, 19-20, and 22-26 are also allowable. Thus, Applicants respectfully request allowance of all the pending claims in view of the subsequent remarks regarding the above-mentioned independent claims.

#### I. Objections to Specification

Applicants have amended the specification to eliminate blank lines. The blank lines have been replaced with the appropriate U.S. Patent Application Numbers. Additionally, attorney docket numbers have been removed. This amendment does not constitute new matter.

#### II. Recently added Claims 21-26

There is clear support for new Claim 21-26 in the current patent application. Claims 21-26 are method claims corresponding to the system claims 12-17. More specifically, the support for these claims can be found at least in FIG. 2 and in the detailed description on page 4, lines 26-32, page 8, lines 24-35, and page 9, lines 1-22. Therefore, the Applicants assert that newly added Claims 21-26 do not constitute new matter and should be entered in the current application.

#### III. Claim Amendments

Applicants have amended independent claims 1, 12, and 18. Claims 1 and 18 now have a limitation of enhancing the true edge so that the true edge is sharpened. Support for these amendments can be found in the detailed description at least on page 12, lines 11-15. Claim 12 now has limitations that further elaborate on an order of events. Support for this amendment can

be found in the detailed description at least on page 7, lines 14-24, page 8, lines 24-35, and page 9, lines 1-22. Dependent claim 16 has been amended to correct antecedent basis.

#### IV. 35 U.S.C. §102 Rejections

In the Office Action mailed November 11, 2005 (“Office Action”), claims 12-17 were rejected under 35 U.S.C. §102 as unpatentable over Scognamiglio, *et al.* “Picture Enhancement in Video and Block-Coded Image Sequences”, IEEE Transactions on Consumer Electronics, Vol. 45, No. 3, August 1999 (“Scognamiglio”). Since claim 12 is independent and claims 13-17 all depend from claim 12, the comments below will focus on the independent claim 12.

A proper rejection of a claim under 35 U.S.C. § 102 requires that a single prior art reference disclose each element of the claim. *See, e.g., W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303, 313 (Fed. Cir. 1983). The test is the same for a process. Anticipation requires identity between the claimed process and a process of the prior art. The claimed process, including each step thereof, must have been described or embodied, either expressly or inherently, in a single reference. *See, e.g., Glaverbel S.A. v. Northlake Mkt'g & Supp., Inc.*, 45 F.3d 1550, 33 USPQ2d 1496 (Fed. Cir. 1995). Those elements must either be inherent or disclosed expressly. *See, e.g., Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 7 USPQ2d 1057 (Fed. Cir. 1988); *Verdegaal Bros., Inc. v. Union Oil Co.*, 814 F.2d 628, 2 USPQ2d 1051 (Fed. Cir. 1987). For anticipation, there must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention. *See, e.g., Scripps Clinic & Res. Found. v. Genentech, Inc.*, 927 F.2d 1565, 18 USPQ2d 1001 (Fed. Cir. 1991). In summary, the single prior art reference must properly disclose, teach or suggest each element of the claimed invention. Moreover, “every element of the claimed invention must be literally present, arranged as in the claim. ... The identical invention must be shown in as complete detail as is contained in the patent claim.” *See, e.g., Richardson v. Suzuki Motor Company Co.* 868 F.2d 1226, 1236 (Fed. Cir. 1989).

*Scognamiglio* does not disclose the limitations found in Claim 12, as amended. Specifically, *Scognamiglio* does not disclose “a decoder operative to receive an encoded digitized image and to expand the encoded digitized image to generate a decoded digitized image; a post-processing unit operative to **generate a processed image by filtering** the decoded digitized

image; and an edge enhancer operative to detect an edge in the **processed image** to enhance the edge in the **processed image**.” (Emphasis added.) See *Scognamiglio* on page 681, wherein Figure 3 has a box labeled enhancement of thin lines that precedes the IIR low pass filter. This is confirmed by the following language on page 683: “From Fig. 3, it can be noticed that the final value of the horizontal control function *cx* is obtained by a spatial low-pass filtering...”

Claim 12 is not anticipated for at least the reason that *Scognamiglio* does not teach every claim element. Thus, Applicants respectfully request allowance of pending claims 12-17.

### V. 35 U.S.C. §103 Rejections

In the Office Action, claims 1-11 and 18-20 were rejected under 35 U.S.C. §103 as unpatentable over U.S. Patent No. 5,850,294 (“*Apostolopoulos*”) in view of U.S. Patent No. 5,418,574 (“*Miyabata*”) and further in view of U.S. Patent No. 5,844,614 (“*Chong*”). Since claims 1 and 18 are independent and claims 2-11 and 19-20 depend from these independent claims, the comments below will focus on these independent claims. As detailed below, a proper *prima facie* case of obviousness has not been presented. The rejections should be withdrawn for at least this reason.

For a *prima facie* case of obviousness, there must be a motivation to modify the reference or combine reference teachings, **and** the cited references must teach or suggest all of the claim limitations **with** a reasonable expectation of success. *In re Vaeck*, 947 F.2d 488 (Fed. Cir. 1991). In order for a reference to be effective prior art under 35 U.S.C. § 103, it must provide a motivation whereby one of ordinary skill in the art would be led to do that which the applicant has done. See *Stratoflex Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1535, 218 USPQ 871, 876 (Fed. Cir. 1983). The Patent Office has the burden under 35 U.S.C. § 103 to establish a *prima facie* case of obviousness, which can be satisfied only by showing some objective teaching in the prior art would lead one to combine the relevant teachings of the references. See *In re Fine*, 837 F.2d 1071, 1074 (Fed. Cir. 1988). It is axiomatic that in order for a *prima facie* case of obviousness to be properly presented, a motivation to combine the references either must exist expressly or implicitly. See *In re Rouffet*, 149 F.3d 1350, 1357, 47 U.S.P.Q.2d 1453, 1457-58 (Fed. Cir. 1998).

There is nothing taught or suggested in *Apostolopoulos* that the edge related processing of *Miyabata* or *Chong* could be combined with the method of *Apostolopoulos*. Applicants respectfully submit that the presence of edge distortion in the edges of *Apostolopoulos* does not suggest eliminating or reducing the edge distortion. Hint of a problem does not suggest a solution. Furthermore, as recognized by the Examiner in the Office Action on page 11, *Apostolopoulos* teaches away from filtering edge pixels. There is nothing in *Apostolopoulos* to suggest that, even if bolstered by *Miyabata* and/or *Chong*, the resultant method would provide a method suitable for use in sharpening an edge. Further, although *Miyabata* and *Chong* disclose edge detection, neither teaches nor suggests that, if used as described therein, the presently claimed edge enhancement would result.

*Miyabata's* goal is "to provide a video signal correction apparatus capable of improving **correction of color bleeding** in images, and of suppressing image deterioration during such correction." (See col. 2, lines 26-30) (Emphasis added.) *Miyabata* only corrects for color bleeds and does not enhance an edge. One skilled in the art would not look to a reference describing color bleed correction in order to solve a problem resulting from compression and decompression of digital images. The aforementioned lack of motivation to combine *Apostolopoulos* and *Miyabata*, together with *Miyabata's* teachings directed toward color bleeding correction, establish a lack of a *prima facie* case of obviousness in the present case.

*Chong* does not correct the failures of *Apostolopoulos* and *Miyabata*. As is known in the art, one example of sharpening is to exaggerate outlines and areas of high contrast in an image to give the appearance of better definition. The present invention accomplishes this exaggeration through increasing the differences in intensities of portions of an image, dependent upon portion classification. In contrast, smoothing, as known in the art, is the reduction of the local variability that results in a reduction of local variance. The present invention sharpens edges by increasing the differences between edge and non-edge portions of an image. *Chong* smoothes edges by decreasing differences between edge and non-edge portions of an image.

According to *Chong*, the "**ringing noise** removing apparatus ... is capable of maintaining the reconstructed video sharpness while removing **the ringing noise** effect from the

reconstructed video by detecting the sources causing such noise and applying an adaptive filter to the detected areas.” (See *Chong* col. 1, lines 7-12) (Emphasis added.)

Furthermore, in order to compress more bits, the quantization parameters are designed to preserve the low frequency coefficients at the upper left corner of the block of 8x8 pixel, this design will cause more errors to be generated for an edge block when the edge block is decoded by the decoder. The error will cause a ringing effect (corona effect) **appearing around the edge of the reconstructed block**. This effect causes a noise component in the high frequency area of the decoded video signal, and such noise is referred to as a "ringing noise".” (See *Chong* col. 2, lines 29-38) (Emphasis added.)

*Chong* **smoothes** edges created when a block is reconstructed to eliminate the ringing noise, as indicated above, and does not involve enhancing a true image edge as recited in the claims of the present invention. The smoothing of *Chong* is described in detail in col. 10, line 54-67. Since *Chong* teaches **smoothing** edges, it cannot suggest edge enhancement as recited in claim 1, “**enhancing the true edge portion by** associating the subject image portion with a third image intensity, wherein the third image intensity is less than the first image intensity, **thereby sharpening the true edge**.” (Emphasis added.) Nor can *Chong* suggest edge enhancement as recited in claim 18, “**enhancing the true edge pixel by** associating a fourth image intensity with the **true edge pixel**, the fourth image intensity being lower than the first image intensity, **thereby sharpening the true edge pixel**.” (Emphasis added.) Since the cited references do not teach or suggest all of the claim limitations, the rejection under 35 U.S.C. §103 is not proper.

In order to support a rejection under 35 U.S.C. §103, the Examiner must establish a *prima facie* case of obviousness. Thus, the initial burden of proving obviousness lies with the Examiner. Since the Examiner has not identified in the Office Action a proper motivation to combine, a reasonable expectation of success, or a teaching/suggestion of all the claim limitations, there can be no finding of obviousness. Thus, Applicants respectfully request allowance of pending claims 1-11 and 18-20, as amended in view of the remarks above.


## VI. Conclusion

Claims 1-26 are currently pending in the patent application. Of these pending claims, claims 1, 12, 18, and 21 are independent claims. Since the Applicants respectfully assert that these independent claims are allowable, dependent claims 2-11, 13-17, 19-20, and 22-26 are also allowable. Thus, Applicants respectfully request allowance of all the pending claims.

A Credit Card Payment Form PTO-2038 authorizing payment in the amount of \$760 (representing \$510.00 for the 3-Month Extension of Time fee, \$150.00 for the additional claims fee, and \$100.00 for the additional independent claim fee) is enclosed. This amount is believed to be correct; however, the Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 14-0629.

Respectfully submitted,

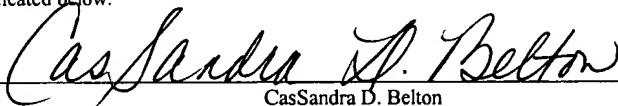
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